QUICK LOCK

DIBt certification

No. Z-42.3-374

Quick-Lock Liner End Sleeve User Manual

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Contents

1. About this document 4

1.1 Regulations 4

1.2 Certifications 4

2. Description of the Quick-Lock liner end sleeve 5

2.1 Intended use 5

2.2 Suitability and materials used 5

3. How to use the Quick-Lock liner end sleeve 6

3.1 Preparation 6

3.1.1 Inspecting the pipe 6

3.1.2 Preparing the pipe 6

3.2 Equipment and materials 6

3.3 Preparing the liner end sleeve 7

3.4 Preparing the end of the liner 10

3.5 Installing the Quick-Lock liner end sleeve 11

4. Appendix 14

4.1 Pneumatic cutter for liner end sleeves 14

4.2 Maintenance instructions for the pneumatic cutter 15

4.3 Technical data sheet for liner end sleeve 16

1. About this document

These instructions supplement the basic Quick-Lock user manual.

They specifically describe how to use the Quick-Lock liner end sleeve.

Please observe the aforementioned user manual with its general instructions on using the Quick-Lock system.

1.1 Regulations

The basis and general specification for pipe repairs using the Quick-Lock system is

- DWA data sheet M143 Part 3
  “Repairing wastewater pipes and sewers with internal sleeves”
- See the main user manual.

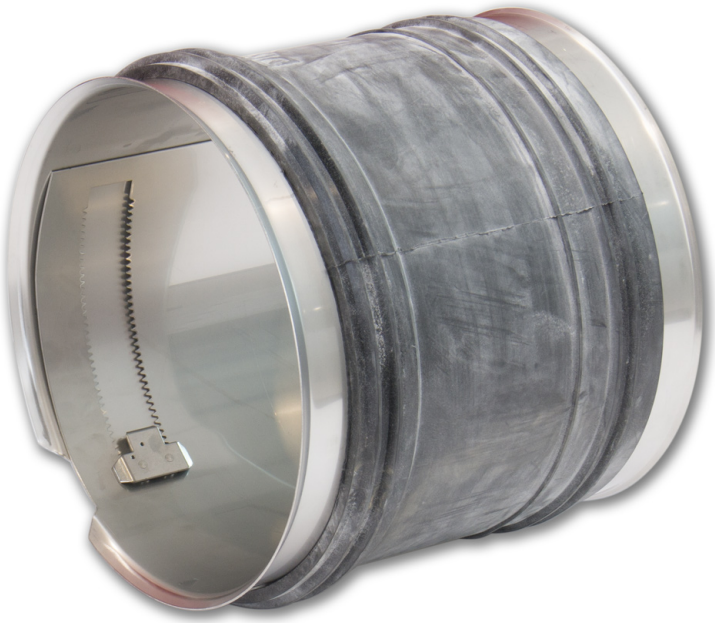
1.2 Certifications

The Quick-Lock liner end sleeve for pipe diameters DN 150 – DN 600

- has been certified under building law by the German Institute for Civil Engineering (DIBt) since 2012.
- The system is also certified as resistant to jetting in accordance with DIN 19523.
- The Quick-Lock liner end sleeve has been tested by the IKT Institute for Underground Infrastructure.

2. Description of the Quick-Lock liner end sleeve

2.1 Intended use



The Quick-Lock liner end sleeve is a product for permanently and tightly sealing liner systems to the host pipes or manhole pipe connections in the range of diameters from DN 150 to DN 600.

2.2 Suitability and materials used

The system is made from V4A stainless steel of grade 1.4404 (AISI 316L) and an EPDM compression seal. The materials used are permanently resistant in municipal wastewater systems. The suitability of the materials must be ascertained for use in industrial or polluted wastewater.

The Quick-Lock liner end sleeve may only be installed in cured, stress-free liner systems.

Hydrophilic waterstop tape does not need to be used around the liner.

- The basis for selecting a suitable liner end sleeve is the technical data sheet (appendix 1).
- Observe the instructions in section 1.6 of the main user manual.

3. How to use the Quick-Lock liner end sleeve

3.1 Preparation

3.1.1 Inspecting the pipe

Before using the Quick-Lock liner end sleeve, check the area where the liner is connected to the host pipe or the manhole pipe connection to see whether the liner end sleeve is suitable.

3.1.2 Preparing the pipe

Repairing the contact surfaces

A reliable compression seal is only possible if the quality of the surface is suitable for sealing.

- Repair any irregularities or holes in the host pipe or the manhole pipe connection.
- Only used mineral or epoxy-based materials.
- Let the material cure.

3.2 Equipment and materials

A pneumatic cutter is required for cutting back the liner.

- Uhrig supplies pneumatic cutters that are specially designed for cutting liners. They are low-maintenance and have an adjustable cut depth.
- Observe the operation and maintenance instructions in the appendix.

3.3 Preparing the liner end sleeve

Inspection

Check the sleeve and the rubber jacket for visible damage.

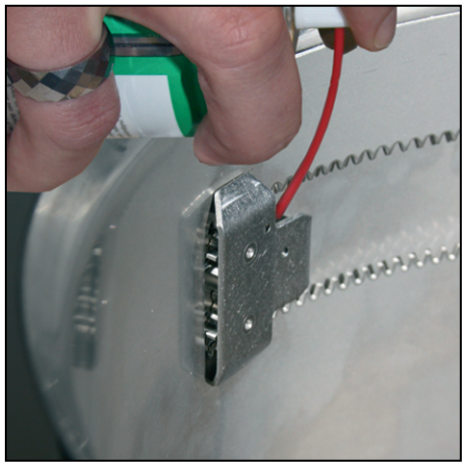
Setting up

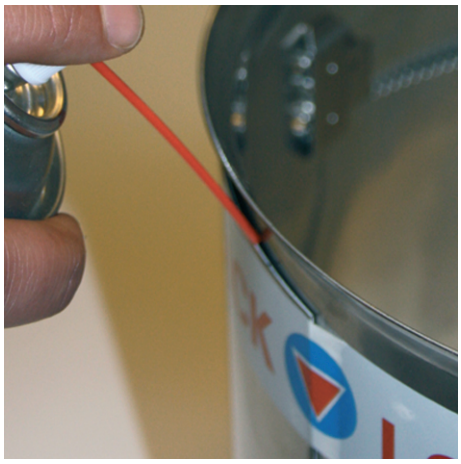
Set up the Quick-Lock liner end sleeve so that the lettering is upside-down.

The end with the wider flare should be at the bottom.

Lubricating

Spray environmentally safe penetrating oil on the gears and the overlap of the steel sleeve.





Cutting the tapes

Cut each of the transport protection tapes half-way through.

Applying talcum powder

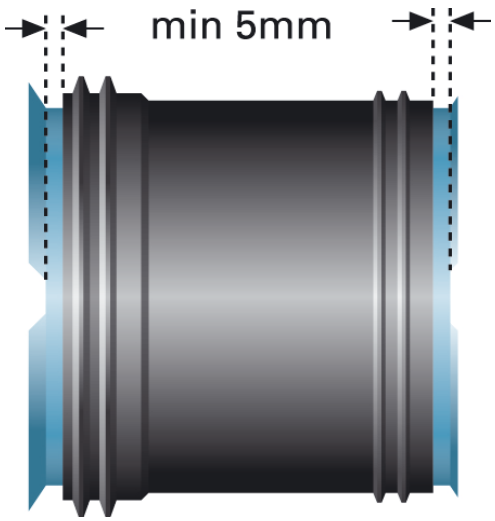
- Apply talcum powder to the inside of the rubber jacket.

Pulling the jacket over the sleeve

- Align the rubber sleeve:
  The end with the thicker pair of circumferential seals should be at the bottom.
- Slip the rubber jacket over the steel sleeve.
- Check again that it is correctly aligned:
  - Steel sleeve: wider flare at the bottom.
  - Rubber jacket: thicker end at the bottom.

Centering the rubber jacket

Position the rubber jacket according to the type of connection.



3.4 Preparing the end of the liner

Fitting the depth stop

- Measure the thickness of the liner.
- Fit the appropriate depth stop on the pneumatic cutter.

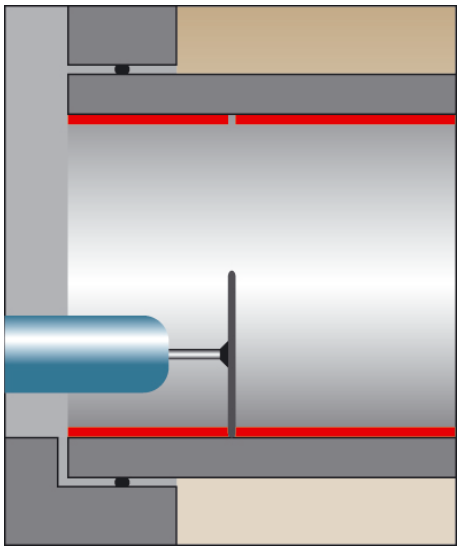
Trimming the liner

- Using the pneumatic cutter, make a radial cut around the entire circumference.

Liner trim length

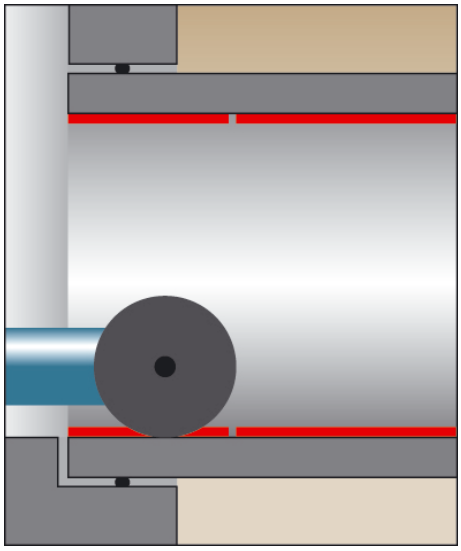
- DN 150 – DN 400: 130–140 mm
- DN 450 – DN 600: 170–180 mm

Measure from the position where the front edge of the sleeve will be.



Longitudinal cut

- Make a longitudinal cut with a pneumatic angle grinder. **Do not damage the host pipe.**
- Remove the liner offcut.
- Deburr the new end of the liner with the angle grinder.
- Clean the area where the liner will be connected with a high-pressure jet.



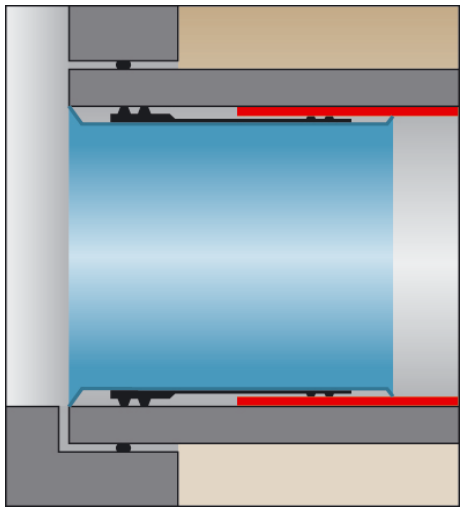
3.5 Installing the Quick-Lock liner end sleeve

Positioning the liner end sleeve in the host pipe

- Depending on the type of connection:

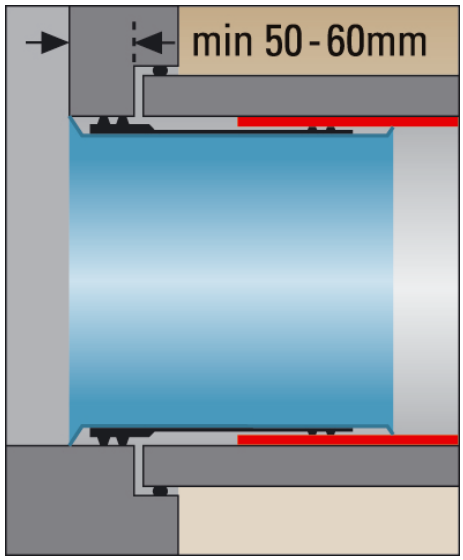
Alternative A (standard method):
Connecting to liner in host pipe

- Place the rubber jacket over the middle of the steel sleeve



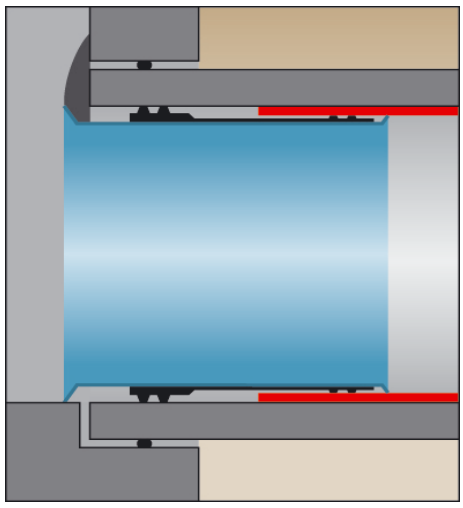
Alternative B:
Connecting to liner in manhole pipe connection

- To do this, the surface of the manhole pipe connection has to be suitable for sealing and there may be no significant bends in the connection from the host pipe to the manhole. Maximum bend ≤1.0°.
- For a tight seal, the sealed area of the manhole wall (pipe connection) must be at least 50–60 mm.
- Place the rubber jacket at the front of the steel sleeve; for the minimum distance see section 3.3, point 8.



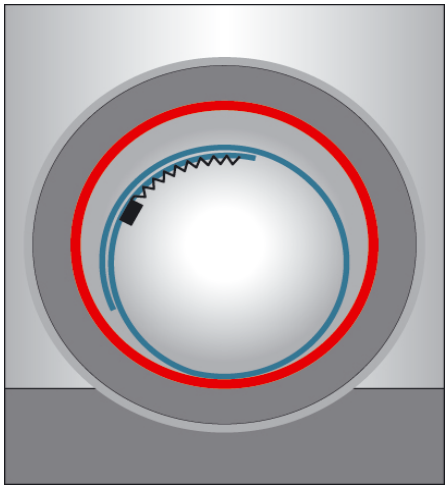
Alternative C:
Edge of the sleeve as repair bead

- Place the rubber jacket at the rear of the steel sleeve; for the minimum distance see section 3.3, point 8.
- The flared end of the sleeve protrudes 10-15 mm inside the manhole and acts as a bead for repairs around the pipe connection.



Lock at 9 - 10 o'clock position

- Position the liner end sleeve so that the lock is roughly in the 9 to 10 o'clock position.
- Make sure that the pairs of circumferential seals on the rubber jacket are in the area to be sealed (see the illustrations of alternatives A, B, and C).

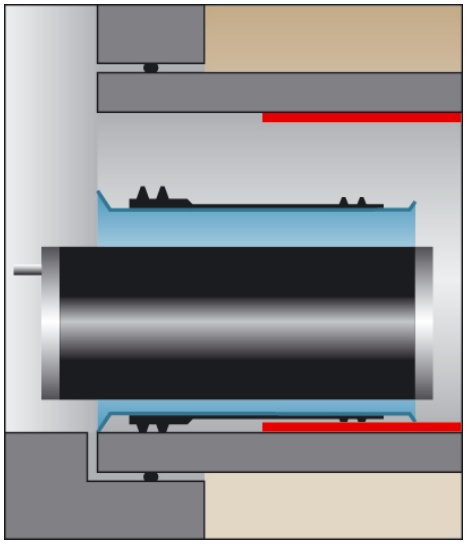


Positioning the balloon

Position the balloon so that the end of the balloon lines up with the rear edge of the liner end sleeve.

Positioning pressure

Press the sleeve against the old pipe with a positioning pressure of 2.0–2.5.



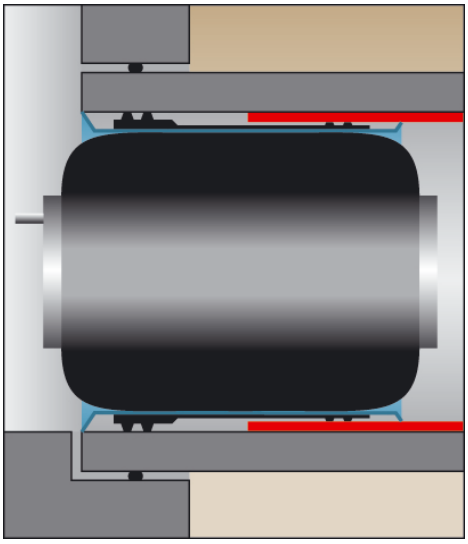
Positioning pressure

Repositioning the balloon for application

Make sure the balloon is lined up in the middle of the liner end sleeve.

Note: The balloon must be entirely inside the host pipe / liner end sleeve.

Otherwise, there is a risk of the balloon inflating in the manhole and endangering the installation personnel.



Evacuating the manhole

For reasons of safety, nobody may be in the manhole when the application pressure is applied.

Lethal hazard!

If a defective balloon bursts, the blast can cause serious injury or death.

Exit the manhole and make sure there is no one left in it.

Danger!

Application pressure

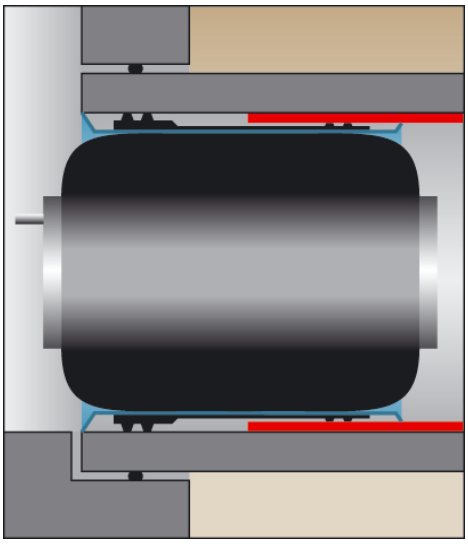
- Inflate the balloon to the application pressure.
- This fully clamps the liner end sleeve in place.

Application pressure according to nominal diameter:

- DN 150 – DN 200: 5.0–5.5 bar
- DN 225 – DN 400: 4.0–5.0 bar
- DN 450 – DN 600: 3.5–4.5 bar

Depressurising

- Deflate the balloon.
- Only then can you re-enter the manhole.



Application pressure

Completion

- Remove the balloon.
- Check that the liner end sleeve is correctly fitted.

Complete the documentation as required by the customer.

4. Appendix

4.1 Pneumatic cutter for liner end sleeves

Observe the operating instructions:

Safety:

- Always wear face, ear and mouth protection.
- Only use the tool for its intended purpose.
- The tool may only be used by qualified personnel.

Pneumatic system requirements:

- Minimum compressor output 1.1 m³/min.
- Recommended operating pressure 6.2 bar at the tool (maximum operating pressure at the tool 8 bar)
- Air hose ∅ 13 mm ID, maximum length 20 m
- Only use the pneumatic cutter with the oil and oiler supplied, oil quantity: approx. 1–2 drops per minute.
- Air consumption approx. 1000–1500 l/min.
- Always observe the operating manual supplied with the equipment.

4.2 Maintenance instructions for the pneumatic cutter

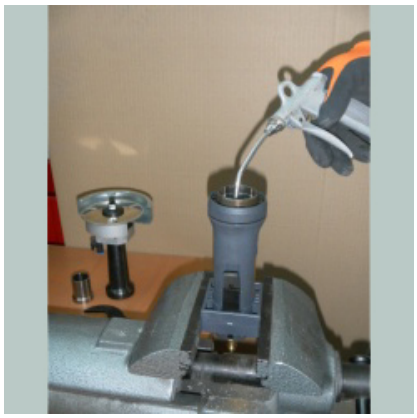
Clamp the holder for the pneumatic cutter in a vice.

Clamp the tool in the holder.

Using the wrench provided, unscrew the pneumatic cutter in a clockwise direction

Remove the pneumatic motor and the spacer bushing.

Take the blades out of the pneumatic motor.



Blow out the housing and motor with compressed air.

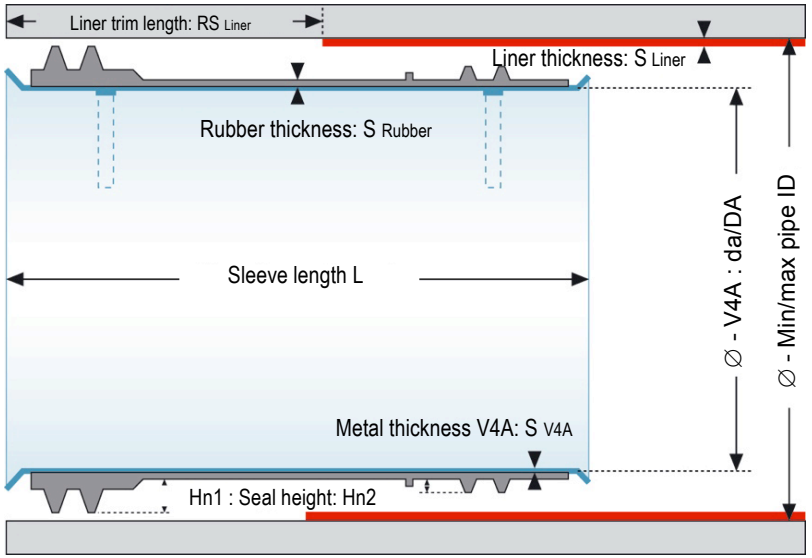
Spray the pneumatic motor with WD 40 anti-corrosion spray or a similar product.

Put the blades back in, with the tapered side on the inside.

Reassemble the pneumatic cutter and tighten it hand-tight with the wrench.

4.3 Appendix
Technical data sheet

Liner end sleeve


Liner trim length: RS Liner
Liner thickness: S Liner
Rubber thickness: S Rubber
Sleeve length L
Ø - V4A : da/DA
Ø - Min/max pipe ID
Metal thickness V4A: S V4A
Hn1 : Seal height: Hn2

Liner end sleeve	Sleeve length	Suitable for pipes from / to		Liner thickness[1] min-max	Liner trim length	Stainless steel sleeve			Rubber jacket			Stock item
		Pipe ID min.	Pipe ID max.			Metal thickness	V4A pipe rolled	Max. expanded diameter	Rubber thickness	Height of seals		
mm	*mm*	*mm*	*mm*	*mm*	*mm*	*mm*	*mm*	*mm*	*mm*	*mm*	*mm*	
DN:	*L*	*DN min*	*DN max*	*S Liner*	*RS Liner*	*S V4A*	*da*	*DA*	*S Rubber*	*Hn1*	*Hn2*	
150	250	146	160	3-8	130-140	1.0	119	146	2	10	4	X
175	250	171	190	3-8	130-140	1.2	142	176	2	10	4	X
200	250	190	212	4-9	130-140	1.2	160	199	2	11	4	X
225	250	212	238	4-9	130-140	1.2	182	225	2	11	4	X
250	250	238	265	4-9	130-140	1.2	206	251	2	11	4	X
275	250	265	292	4-9	130-140	1.2	233	278	2	11	4	X
300	250	290	319	4-9	130-140	1.2	260	305	2	11	4	X
350	250	319	359	4-9	130-140	1.5	285	345	2	11	4	X
400	250	359	413	4-9	130-140	1.5	322	397	2	11	4	X
450	300	413	480	5-11	170-180	2.0	371	461	2	13	5	X
500	300	480	542	5-11	170-180	2.0	437	522	2	13	5	X
600	300	542	615	6-12	170-180	2.0	498	595	2	13	5	X

1) The liner thickness is the actual measured thickness of the liner including annular gap, outer foil, etc.